

General Information

1.1 Introduction

In order to comply with the Stormwater Management Ordinance adopted by the Columbia County Board of Commissioners, this Columbia County Stormwater Management Design Manual (CCSWMDM) has been compiled to provide engineers, developers, land planners, and others information necessary to construct public/private facilities in Columbia County. Proper management of stormwater runoff will minimize damage to public and private property, ensure a functional drainage system, reduce the effects of development on land and stream channel erosion, assist in the attainment and maintenance of water quality standards, enhance the local environment associated with the drainage system, reduce local flooding, maintain as nearly as possible the pre-developed runoff characteristics of the area, and facilitate economic development while mitigating associated flooding and drainage impacts.

This design manual is applicable to all public, private, commercial and industrial development.

The objective of this manual is to provide guidance on addressing stormwater runoff. The goal is to provide an effective tool for the development community to reduce both stormwater quality and quantity impacts, and protect downstream areas and receiving waters.

This manual will provide technical guidance for the preparation of Stormwater Concept Plans, Stormwater Management Plans, the construction and design of stormwater controls facilities, and the execution of Inspection and Maintenance Agreements, as required by the Columbia County Stormwater Management Ordinance.

Sound engineering practices and judgment should be applied in the planning and design of all proposed stormwater management systems. Columbia County does not assume to provide complete and comprehensive technical review of construction plans and reports submitted for the construction of new facilities but rather provide a general review of information and documentation submitted to Columbia County to generally insure that the appropriate documentation of design calculations has been submitted.

It shall be the responsibility of the owner to submit the appropriate documentation, as required by the Columbia County Stormwater Management Ordinance and this Stormwater Management Design Manual. In the event that exceptions to the minimum requirements should be proposed by the developer, the engineer and designer shall meet with the County Engineering Office to discuss proposed exceptions to minimum requirements. This meeting shall occur during the concept design phase before any substantial design work is completed.

The application of this manual and the provisions expressed herein shall be the minimum stormwater management requirements and shall not be deemed a limitation or repeal of any other powers granted by State statute. In addition, if site characteristics indicate that complying with these minimum requirements will not provide adequate designs or protection for local property or residents, it is the designer's responsibility to exceed the minimum requirements as necessary, in order to develop a stormwater management system that is a feasible, constructible system designed to safely and efficiently control stormwater runoff in a manner that protects lives and property, protects water quality, and is maintainable in perpetuity.

The property owner, developer and designated planners and engineers shall review the general development plans and detailed plans for the project to determine the applicability of various requirements of the issuing authority and the state that affect the tract to be developed and the area surrounding it. They shall review the zoning ordinance, stormwater management ordinance,

subdivision ordinance, flood damage prevention ordinance, soil erosion and sedimentation control ordinance, and other ordinances which regulate development of land within the jurisdictional boundaries of the issuing authority.

1.2 Definitions

Unless otherwise specified, or if it is apparent from the context, definitions herein will be the same as those in the Columbia County Code of Ordinances. The Stormwater Management Ordinance defines many of the terms used within this manual. For the purpose of this manual, the following terms, phrases and words, and their derivatives, shall have the meaning given herein:

- **As-built plan** -- shall mean a set of record drawings stamped, dated, and signed by a Georgia Registered Land Surveyor that delineate the as-constructed infrastructure improvements.
- **Best Management Practice (BMP)** -- means a wide range of management procedures, activities and prohibitions or practices which control the quality and/or quantity of stormwater runoff, and which are compatible with the planned land use.
- **Cross-Drain Culvert** -- shall mean a culvert located under a roadway.
- **Design Report** -- shall mean the report that accompanies the Stormwater Management Plan and includes data used for engineering analysis, results of all analysis, design and analysis calculations (including results obtained from computer programs), and other engineering data that would assist the Columbia County Engineer in evaluating proposed storm water management facilities.
- **Designer** -- shall mean a professional who is permitted, by Georgia law, to prepare plans and studies required by the Stormwater Management Ordinance and The Stormwater Management Design Manual.
- **Detention Structure** -- shall mean a permanent storm water management structure whose primary purpose is to temporarily store storm water runoff and release the stored runoff at controlled rates.
- **Developed Land Use Conditions** -- shall mean the land use conditions according to the current proposed development plan.
- **Erosion** -- shall mean the wearing away of land surface by the action of wind, water, gravity, ice, or any combination of those forces.
- **Erosion and Sediment Control** -- shall mean the control of solid material, both mineral and organic, during a land disturbing activity to prevent its transport out of the disturbed area by means of air, water, gravity, or ice.
- **Existing Land Use Conditions** -- shall mean the land use conditions existing at the time of the request for the land disturbing activity permit for the proposed development.
- **Grading** -- shall mean excavating, filling (including hydraulic fill) or stockpiling of earth material, or any combination thereof.
- **Hotspot**-- a land use or activity on a site that produces higher concentrations of trace metals, hydrocarbons or other priority pollutants than are normally found in urban stormwater runoff.
- **Impervious surface** -- shall mean those areas which prevent or impede the infiltration of stormwater into the soil in the manner in which it entered the soil, in natural conditions, prior to development. Common impervious surfaces include, but are not limited to, rooftops, sidewalks, walkways, patio areas, driveways, parking lots, storage areas, compacted gravel and soil surfaces, awnings and other fabric or plastic coverings, and other surfaces which prevent or impede the natural infiltration of stormwater runoff which existed prior to development.
- **Imperviousness** -- shall mean the degree to which a site is impervious.
- **Infiltration** -- shall mean the passage or movement of water through the soil profile.
- **Interior Culvert** -- shall mean a culvert or pipe that is not located under a roadway.
- **Natural Waterways** -- shall mean waterways that are part of the natural topography. They

usually, but not always, maintain a continuous or seasonal flow during the year and are characterized as being irregular in cross-section with a meandering course.

- **New development** is defined as land disturbing activities, structural development (construction, installation or expansion of a building or other structure), and/or creation of impervious surfaces on a previously undeveloped site.
- **Non-Erodible** -- shall mean a material, e.g., natural rock, rip rap, concrete, plastic, etc., that will not experience significant surface wear due to natural forces of wind, water, ice, gravity or a combination of those forces.
- **Nonpoint Source (NPS) Pollution** -- shall mean pollution contained in storm water runoff from ill-defined, diffuse sources.
- **On-Site Stormwater Management** -- shall mean the design and construction of a facility necessary to control storm water runoff within and for a single development.
- **Person responsible for the land disturbing activity** -- shall mean:
 - The landowner or person in possession or control of the land who directly or indirectly allowed the land disturbing activity or has benefitted from it or who has failed to comply with any provision of the Columbia County Stormwater Management Ordinance and/or
 - The person who has or represents the entity having financial or operational control over the land disturbing activity.
- **Post-Development Conditions** -- shall mean the conditions which exist following the completion of the land disturbing activity in terms of topography, vegetation, land use, and rate, volume or direction of storm water runoff.
- **Pre-Developed Conditions** -- shall mean those land use conditions that existed prior to the initiation of the proposed land disturbing activity in terms of topography, vegetation, land use, and rate, volume or direction of storm water runoff.
- **Redevelopment** -- structural development (construction, installation or expansion of a building or other structure), creation or addition of impervious surfaces, replacement of impervious surface not part of routine maintenance, and land disturbing activities associated with structural or impervious development. Redevelopment does not include such activities as exterior remodeling.
- **Regional Stormwater Management** -- shall mean the design and construction of a facility necessary to control stormwater runoff within or outside a development and for one or more developments.
- **Registered Engineer** -- shall mean an engineer properly registered and licensed by the State of Georgia.
- **Registered Land Surveyor** -- shall mean a land surveyor properly registered and licensed by the State of Georgia.
- **Registered Landscape Architect** -- shall mean a landscape architect properly registered and licensed by the State of Georgia.
- **Responsible Personnel** -- shall mean any foreman, superintendent, or similar individual who is the on-site person in charge of land disturbing activities.
- **Retention Structure** -- shall mean a permanent structure whose primary purpose is to permanently store a given volume of storm water runoff. Release of the given volume is by infiltration and/or evaporation.
- **Stabilization** -- shall mean the installation of vegetative or structural measures to establish a soil cover to reduce soil erosion by storm water runoff, wind, ice and gravity.
- **Stage Work or Stage Construction** -- shall mean a plan for the staged construction of stormwater facilities where portions of the facilities will be constructed as different stages of the proposed development are started or completed.
- **Storm Events**
 - **2-year Frequency**-- shall mean a storm event which statistically has a 50 percent chance on average of occurring in any given year.

- **5-year Frequency**-- shall mean a storm event which statistically has a 20 percent chance on average of occurring in any given year.
- **10-year Frequency**-- shall mean a storm event which statistically has a 10 percent chance on average of occurring in any given year.
- **25-year Frequency**-- shall mean a storm event which statistically has a 4 percent chance on average of occurring in any given year.
- **50-year Frequency**-- shall mean a storm event which statistically has a 2 percent chance on average of occurring in any given year.
- **100-year Frequency**-- shall mean a storm event which statistically has a 1 percent chance on average of occurring in any given year.
- **Stormwater Concept Plan** -- shall mean the overall proposal for a storm drainage system, including as specified in this Stormwater Management Design Manual, for each proposed private or public development to the extent permitted by law. The stormwater concept plan is the preliminary plan submitted for review prior to the finalization of the design and the development of the stormwater management plan.
- **Stormwater Management** -- shall mean the collection, conveyance, storage, treatment and disposal of stormwater runoff in a manner to minimize accelerated channel erosion, increased flood damage, and/or degradation of water quality and in a manner to enhance and ensure the public health, safety, and general welfare, which may include a system of vegetative or structural measures, or both, that control the increased volume and rate of stormwater runoff caused by man-made changes to the land.
- **Stormwater Management Design Manual** -- shall mean the most recent manual of design, performance, and review criteria for stormwater management practices, prepared under the direction of the Columbia County Water Utility. For a fee, copies of this manual can be obtained from the Columbia County Water Utility Division.
- **Stormwater Management Facilities** -- shall mean those structures and facilities that are designed for the collection, conveyance, storage, treatment and disposal of stormwater runoff into and through the drainage system.
- **Stormwater Management Ordinance** -- shall mean the regulations specified in Chapter 34, "Article IV Stormwater Management" of the Code of Ordinances of Columbia County, Georgia.
- **Stormwater Management Plan** -- shall mean the set of drawings and other documents that comprise all of the information and specifications for the drainage systems, structures, BMPs, concepts and techniques that will be used to control storm water as required by the Stormwater Management Ordinance and this Stormwater Management Design Manual. Also included are the supporting engineering calculations and results of any computer analysis.
- **Stormwater Management Qualitative Control** -- shall mean a system of vegetative, structural, or other measures that reduce or eliminate pollutants that might otherwise be carried by storm water runoff.
- **Swale** -- shall mean a structural measure with a lining of grass, rip rap or other materials which can function as a detention structure and convey storm water runoff without causing erosion.
- **Water Quality** -- shall mean those characteristics of stormwater runoff that relates to the physical, chemical, biological, or radiological integrity of water.
- **Water Quantity** -- shall mean those characteristics of stormwater runoff that relate to the rate and volume of the storm water runoff to downstream areas resulting from land development.
- **Watershed** -- shall mean the drainage area contributing stormwater runoff to a single point.

1.3 Environmental Requirements

All stormwater management plans are required to comply with local, state and federal regulations including environmentally sensitive land areas, "wetlands", stormwater runoff quality, and specific National Pollution Discharge Elimination System (NPDES) programs. Depending on location and impact on downstream waters, other state and federal regulations may require compliance. All required environmental permits shall

be obtained prior to final development plan approval by Columbia County.

1.3.1 Wetlands

The delineation and jurisdictional approval of wetlands as identified under Section 404 of the Clean Water Act is regulated by the US Army Corps of Engineers. For projects located in Columbia County, the Central Area Section, Savannah District, of the US Army Corp of Engineers provides review and enforcement activities. Although compliance of Section 404 of the Clean Water Act is the responsibility of the property owner, the Columbia County Board of Commissioners is dedicated to insuring the protection of natural resources and working with the Corps of Engineers in identifying, accessing and evaluating the impact of proposed developments on an existing wetland area. Should characteristics typical of wetlands be identified within a specific project area, the County Engineering Office may request additional information concerning the impact of the proposed development on this area and/or the jurisdictional on delineation of the area.

For projects impacting wetland areas, appropriate documentation of design approval by the US Army Corps of Engineers will be required; for projects impacting lands within 25 feet of state waters, appropriate variances from the Georgia Department of Natural Resources shall be required when applicable.

1.3.2 Water Quality Requirements

The water quality of stormwater runoff depends on a number of factors including: magnitude and duration of rainfall events, soil types, time between storms, land use type and specific activity, illicit connections or illegal dumping, and the ratio of the runoff per volume to the receiving water flow volumes. Columbia County recognizes that the use of structural and nonstructural controls for stormwater management programs is beneficial in controlling pollution of the receiving waters. Therefore, best management practices (BMPs) are required in stormwater plans for project design and construction. An overview of stormwater management BMPs is presented in Part 2, Chapter 3 of this manual, along with guidance tables to assist in the selection of appropriate BMPs.

Exemptions to the Water Quality Standards

Land disturbance which results in installed impervious surface of:

Less than one acre unless a hotspot

One to five acres at Div. Dir. Discretion unless a hotspot

For larger common developments that have an approved stormwater management plan prior to implementation of this manual. Future sections of approved common developments which were not included in the approved stormwater management plan will be subject to water quality standards, unless a variance has been granted by the Director in accordance with Columbia County Code of Ordinances Section 34-158.

1.3.3 Local Regulations

In response to specific requirements of Georgia law Act 599, the latest revision of the Erosion and Sedimentation Act of 1975, (O.C.G.A. 12-7-1, et. seq.), Columbia County has been given local issuing authority for land disturbance activities by the Georgia Soil and Water Conservation Commission. The local program requires the use of best management practices based on the current Soil Erosion and Sedimentation Control Ordinance adopted by Columbia County Board of Commissioners. All developments must also comply with the appropriate Columbia County Codes of Ordinances, including the Soil Erosion and Sedimentation Control Ordinance and the Subdivision Ordinance, current editions.

1.4 Stormwater Design Manual Review and Update

The Stormwater Management Design Manual shall be reviewed annually and updated when necessary to reflect the most current and effective practices, and shall be made available to the public by Columbia County Water Utility Division. Comments may be submitted at any time to the Water Utility Stormwater Department. Updates will be reviewed by the Stormwater Utility and the Engineering Advisory Committee and forwarded to the Columbia County Board of Commissioners for approval.